R. HARTWIG.

METHOD OF MAKING HEAT INSULATED RECEPTACLES.

APPLICATION FILED JUNE 29, 1911.

1,029,364.

Patented June 11, 1912.

Fig. 3

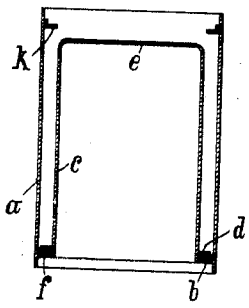


Fig. 4

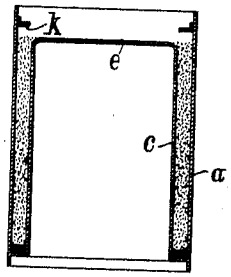


Fig. 5

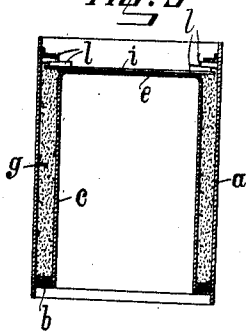


Fig. 6

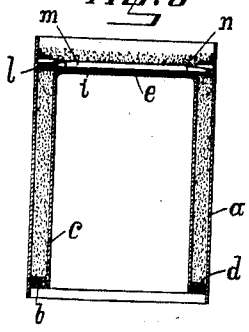


Fig. 7

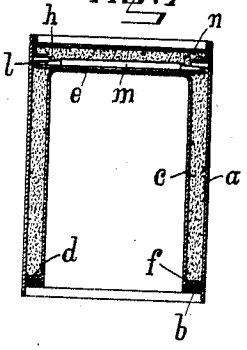


Fig. 1

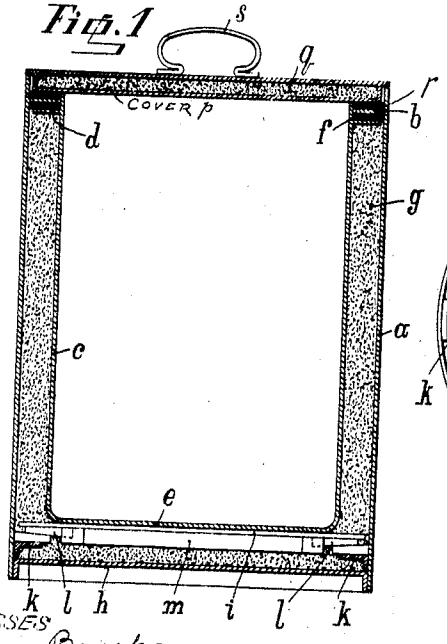
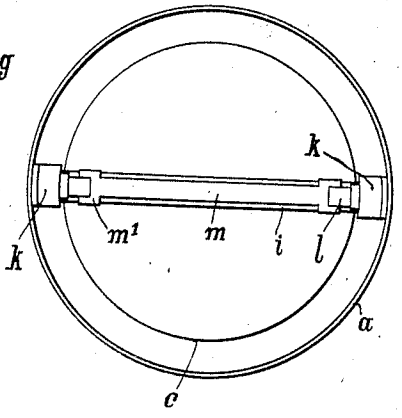


Fig. 2



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METHOD OF MAKING HEAT-INSULATED RECEPTACLES.

1,029,364. Specification of Letters Patent. Patented June 11, 1912.

Application filed June 29, 1911. Serial No. 635,971.

To all whom it may concern:

Be it known that I, ROBERT HARTWIG, a subject of the King of Prussia, residing at No. 12 Bregenzerstrasse, Berlin, Kingdom of Prussia, Germany, have invented a new and useful Method of Making Heat-Insulated Receptacles.

Insulating receptacles have been known consisting of two vessels placed one in the other so as to form a jacket-space which is filled with a bad heat-conducting material. For the purpose of preventing heat from being transferred from one vessel to the other, an insulating ring or the like was placed between the two vessels at the place of transference, that is, near the upper edge. The receptacles were made exclusively by furnishing an outer vessel formed with a bottom, with a bottom layer of an insulating material, placing the inner vessel upon this layer, filling the annular space between the sides of the two vessels with the insulating material, and then making the sealing joint comprising the insulating ring. That method was not very satisfactory because it was not easy to make the bottom layer perfectly smooth, and to arrange the inner vessel concentrically in the outer vessel. These difficulties would have been greater, and in fact insuperable, if it had been desired to ram the insulating layer tightly because this would have been impossible to effect as regards the bottom layer according to that method. The great importance of ramming the insulating material on the insulating property of the vessel had not been appreciated, so that no attempt was made to improve on the loose arrangement of the material of the bottom layer.

The present invention has for its object to remedy those drawbacks by providing an improved method of making a heat insulated receptacle.

The improved method consists in using as the outer vessel a substantial cylindrical shell having no bottom, but being provided with an annular flange or the like. This shell is placed flange downward upon a flat foundation and a jointing device such as for instance a rubber ring is laid upon the flange. Then the inner vessel is inserted bottom upward into the cylindrical outer vessel. In this manner the annular flange of the inner vessel comes into uniform contact all around with the jointing ring, and there is no direct contact between the two vessels. The hollow space between the two vessels is then rammed tight up to the level of the bottom of the inner vessel with a finely divided insulating material, for instance, asbestos, glass wool, ground cork or the like. Then by means of a suitable device having a wedge-like action, the inner vessel is pressed with its flange upon the annular mass of insulating material, and this device is preferably so locked or fixed that it cannot get loose. Finally a layer of insulating material is spread upon the bottom of the inner vessel and rammed tight whereupon the bottom of the outer vessel is pressed down hard upon the said layer and is soldered or otherwise fastened in place.

One construction of receptacle according to this invention is illustrated by way of example in the accompanying drawings, in which—

Figure 1 is a substantially vertical cross section through a vessel made in accordance with my invention; Fig. 2 is a bottom plan view of the vessel, the bottom and loose material immediately adjacent thereto being removed; Fig. 3 is a vertical central section through the inner and outer shells and their flanges, together with the compression ring; Fig. 4 is a section similar to Fig. 3, but showing the loose material as filled in between the inner and outer shells during the making of the vessel; Fig. 5 is a section somewhat similar to Fig. 4, but showing the clamping mechanism as applied; Fig. 6 shows a further step than Fig. 5, to wit: loose material resting upon the clamping mechanism; and Fig. 7 shows the completed vessel which, when first finished, is bottom upward.

In making the vessel I use an inner shell and an outer shell, both parts being inverted and so kept until the completion of the vessel. The outer shell is shown at *a* and is provided internally with a flange *b* adjacent to one end and brackets *k* adjacent to its other end, the outer shell having generally the form of an open ended cylinder. The inner shell is shown at *c* and is provided with a closed end *e* and with an open end opposite the closed end *e*. The shell *c* is further provided with an annular flange *d* encircling its open end and spaced a little distance therefrom. In the manufacture of the receptacle the outer shell *a* is turned into such position that the flange *b* is downward, the shell resting upon a level

base. The ring *f* of resilient material (in this instance rubber) is now laid upon the flange *b*. Next the inner shell *c* is placed in the position indicated in Fig. 3, to wit, bottom upward, and with the flange *d* resting upon the rubber ring *f*. The flange *d* now rests uniformly along the entire surface of the rubber ring *f*, and any pressure applied to the shell *c* has a tendency to be equalized by the ring *f*; yet there is no direct metallic connection between the inner and outer shells. The substantially cylindrical vacant space between the shells is now filled in the usual or any desired manner, with an insulating material in a finely divided form. For this purpose asbestos, glass wool, or powdered cork may be employed. The material is filled into the space up to a level coinciding with the uppermost portion of the inner shell, the material being packed tightly in position and appearing generally as indicated in Fig. 4. A fillet or strip *i* is then placed directly upon the bottom *e* of the shell *c* and wedges *l* are driven between the fillet or strip *i* and the brackets *k* as shown in Fig. 5. By this means the flange *d* of the shell *c* is forced upon the rubber ring *f* on the flange *b* of the shell *a*, thus sealing the joint between the shells. In order to secure the wedges *l* in place a strip or fillet *m* is placed between opposite wedges *l*, the ends of the strip or fillet *m* preferably being forked, as shown, so as to partly embrace the wedges. The parts being thus fitted in position, a layer *n* of the finely divided material is placed upon the bottom *e* of the shell *c*, as shown in Fig. 6, and the disk *h*, with the annular flange integral with it, is forced down upon the material and secured in position by soldering rivets, or in any other desired manner, as shown in Fig. 7. With the receptacle thus formed I preferably employ a cover *p* provided with a filling of finely divided material *q*, similar to that used between the shells. The cover is provided with a handle *s* and rests upon a rubber ring *r* on the flange *b* of the shell *a*.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The improved method of making a heat insulated receptacle comprising an inner and an outer vessel and having a bad heat-conducting material in the jacket-space between the two vessels, which method consists in placing the outer vessel being in the form of a shell without bottom and having an inner flange flange-downward upon a suitable support, inserting the inner vessel having a bottom and an outer flange bottom upward and concentrically into the outer vessel, the outer flange of the inner vessel lying above the inner flange of the outer vessel, ramming tight up the jacket-space between the two vessels with insulating material, placing such material on the bottom of the inner vessel and fastening an outer bottom in the outer shell, substantially as described.

2. The improved method of making a heat insulated receptacle comprising an inner and an outer vessel and having a bad heat-conducting material in the jacket-space between the two vessels, which method consists in placing the outer vessel being in the form of a shell without bottom and having an inner flange flange-downward upon a suitable support, placing an elastic jointing device upon this flange, inserting the inner vessel having a bottom and an outer flange bottom upward and concentrically into the outer vessel, the flange of the inner vessel coming in uniform contact with the jointing device, ramming tight up the jacket-space between the two vessels up to the level of the bottom of the inner vessel with insulating material, compressing the jointing device between the two flanges by means of a tensioning device, spreading a layer of insulating material upon the bottom of the inner vessel, pressing an outer bottom down upon the said layer and fastening the said bottom in the outer shell, substantially as described.

3. The improved method of making a heat insulated receptacle comprising an inner and an outer vessel and having a bad heat-conducting material in the jacket-space between the two vessels, which method consists in placing the outer vessel being in the form of a shell without bottom and having an inner flange flange-downward upon a suitable support, placing an elastic jointing device upon this flange, inserting the inner vessel having a bottom and an outer flange bottom upward and concentrically into the outer vessel, the flange of the inner vessel coming in uniform contact with the jointing device, ramming tight up the jacket-space between the two vessels up to the level of the bottom of the inner vessel with insulating material, arranging a tensioning device above the bottom of the inner vessel, compressing the jointing device between the two flanges by tightening up the tensioning device, locking the said device in place, spreading a layer of insulating material upon the bottom of the inner vessel, pressing an outer bottom down upon the said layer and fastening the said bottom in the outer shell, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ROBERT HARTWIG.

Witnesses:

WOLDEMAR HAUPT,

HENRY HASPER.